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Can the Nation Protect Its Own Property?

A FORTNIGHT ago the Senate of the United States, in Committee of the Whole, was considering a bill which provides that "any person who shall maliciously or negligently and carelessly set on fire any woods, underbrush or prairie on any of the public lands of the United States, or who shall suffer any fire, which he may have lighted on other lands, to pass therefrom to the public lands of the United States, shall be deemed guilty of a misdemeanor, and, upon conviction thereof in any District Court of the United States having jurisdiction of the same, shall be fined in a sum not more than three times the value of the trees or other growth so destroyed or injured, or imprisoned for a term not more than three years, or both."

The occasion for framing this measure, as reported by the Committee on Agriculture and Forestry, was found in a message of the President transmitting a letter from the Secretary of the Interior. In this letter it was stated among other things that a fire was started by the Sheriff of Boise County, Idaho, and certain well known citizens with him, which destroyed a large amount of timber belonging to the Government. In accordance with a special agent's report setting forth these facts, it was recommended by the Secretary of the Interior that the United States District Attorney should institute criminal proceedings against the men who kindled the fire. The United States District Attorney returned the papers in the case with an opinion that there was no way of reaching the perpetrators of this act under the United States statute. It was in view of this that the bill was drawn up by the Commissioner of Public Lands and endorsed by the Secretary of the Interior, for without such legislation it would seem that fires may be kindled deliberately to the destruction of any quantity of Government timber, not to speak of the destruction of human life which often happens in such cases, while the Government is powerless to punish any one for this crime, and that, too, in spite of the fact that in response to an appeal from the Governor of this very territory of Idaho, the United States Government had expended a large amount of money in fighting these forest-fires, in order to protect its citizens from personal loss.

And now when this bill, which seems so fair and just, was before the Senate, Mr. Teller, of Colorado, objected to it (and the bill was laid over in accordance with this objection) on the ground that the Government of the United States cannot create any offense in the state of Colorado or in any other state except on those lands where they have exclusive jurisdiction. That is, the United States Government has no authority to say what shall be larceny or what shall be a misdemeanor on the public lands in the state of Colorado. It has no right to make it a criminal offense to burn timber in the state of Colorado, for the relation of the Government to its timber in that state and to its land is the same as that of any other proprietor. Now if Senator Teller's position is correct—that is, if the United States Government has no power to legislate against offenses committed in the states against its property—it is pretty clear that some comprehensive forest-policy should be inaugurated so that the Government property can be guarded by a sufficient number of watchmen. If the United States has no power to punish incendiaries who burn over its timberland, it would seem to be folly to wait longer before some thoroughly organized administration of the forest-lands, with state co-operation if necessary, is attempted. It does seem, however, that the United States ought to be able to devise methods for protecting its own property even among the God-fearing and law-abiding freemen who inhabit our western states.

The Silk Cotton-Tree.

THE traveler from the north, landing at Nassau, the principal town in the Bahama group of islands, will, if it happens to be his first introduction to the tropics, be most delighted certainly with the beauty of the Cocoanut Palms, with their tall, straight stems crowned with the great tufts of graceful leaves which sway backward and forward with the slightest play of the wind. But next to the Palms, the great tree, of which a portrait is published on page 347, will, if he has any interest at all in the products of Nature, excite his astonishment and curiosity more than anything else on these islands. It is a fine specimen of the Silk Cotton-tree of the West Indies, which botanists call *Eriodendron anfractuosum*. The generic name is formed from two Greek words meaning wool and tree, and was given to it on account of the brown woolly substance which surrounds the seeds, while the specific name, which means the bending in and out of a road or path, was bestowed upon the tree on account of its great size, which made it easier to divert a road round the trunk than to cut down the tree.

The specimen whose portrait we publish stands just in front of the town-house of Nassau, where it was planted probably in the early days of the settlement of the island, as the branches have attained a spread of 150 feet, while a man walking round the buttresses which support the trunk, and which are well shown in our illustration, must make fifty paces.

The Silk Cotton-tree is the largest inhabitant of the Caribbean forests. Few trees have a loftier and more imposing appearance, as it overtops its companions in the forest, or appears in solitary grandeur on some open plain or by some cultivated field, with its stout trunk strengthened in old age with numerous buttresses, and dividing sometimes near the ground into enormous spreading branches, and sometimes shooting up into a great column sixty or eighty feet high. The branches and the trunk of young plants are armed with straight acuminate spines. The ample glabrous leaves are palmately divided into six or seven oblong-lanceolate leaflets. The flowers, with their persistent calyx and five reflexed pale rose-colored petals, joined with each other, and with the three-branched column formed by the united filaments, are produced in the greatest profusion, and possess the delicate fragrance of primroses. The fruit is a large, woody, round, obtuse capsule, consisting of five cells, and splitting open by five valves, each cell containing a number of

broad seeds surrounded by dark brown cotton similar in character to that of the Cotton-plant, which botanically is nearly related to this tree.

The Silk Cotton-tree grows very rapidly, and the branches, like those of the Gumbo Limbo, another West Indian tree, which is common also on the islands of south Florida, have the power when cut and set in the ground of developing roots and growing rapidly into large trees. This makes it an easy plant to propagate, and it is frequently planted as a shade or road-side tree, not only in the West Indies, but in all other tropical parts of the world. The great size of the trunks, their lightness, and the ease with which the wood can be cut, enabled the Caribs to make from the Ceiba, as they called this tree, their great war canoes, in which they traveled safely over wide distances of open sea. The young leaves are mucilaginous, and are sometimes used by negroes as a substitute for the okra, which is the fruit of another plant of the same alliance; and the cotton which surrounds the seeds, although the fibre does not permit of its being woven into cloth, is sometimes used in stuffing furniture.

The imposing size and great beauty of this tree, and possibly the belief that the woolly appendage of the seed might prove of greater value than it has turned out to be, attracted the attention and excited the wonder of travelers in the early days of the discovery of the new world. Oviedo y Valdes, who landed in San Domingo in 1514 and wrote the earliest account of the natural history of America, was the first author to mention it, and from Oviedo's day to the present the Silk Cotton-tree has been described more or less in detail by every author who has written of the natural features and productions of the West Indies and the Spanish main.

Eriodendron belongs to the tribe of the *Bombaceæ* of the Mallow family, of which several other remarkable plants are members. It contains some of the largest trees. The African Baobab, the Adansonia of botanists, its near ally, is one of the marvels of the vegetable kingdom. The trunk of this tree sometimes attains a circumference of a hundred feet, and individuals were estimated once to have lived through six centuries. Later investigations, however, do not sustain such theories, as the Baobab is now known to grow like the other trees of its family with great rapidity. It is a native of the Cape de Verd Islands and other parts of west tropical Africa, where the negroes regard it with superstitious veneration, rendering it sacred by attaching bracelets to the trunk and branches in the hope of securing it from injury at the hands of the profane. The thin bark, which covers trunk and branches, is green, and appears to perform, to a certain extent, the functions of leaves, which only remain on the branches during three or four months of the year. It is the pulp that surrounds the seeds of this tree which is believed to have furnished the *Terra lemnia*, the mysterious powder brought to Egypt by the caravans and held in high repute by the physicians of the ancients for the treatment of many diseases. Another species of Adansonia inhabits Madagascar, and a third is Australian.

To the *Bombaceæ*, too, belongs the Durio (*Durio zibethinus*), a large tree of the Indian Archipelago which furnished the Durien fruit, one of the most delicate and esteemed of all tropical fruits, although it possesses an odor which is unspeakably offensive to people when they first smell it, but which is unnoticed when once the taste for it is fairly acquired. This fruit forms a large part of the food of the native population in some regions of the East Indies, and as the trees are always left standing when the forests are cleared off for cultivation, the Durio is one of the conspicuous features in many eastern tropical landscapes. It is cultivated all over the east for the fruit, while the wood, like that of another plant of the same relationship, the Asiatic Bombax, has many useful qualities.

We are indebted to Mr. William B. Bacon, of Boston, for the photograph of the great Silk Cotton-tree at Nassau, from which our illustration has been made.

The Economic Uses of Leaves.

EVERY part of plants and trees is more or less utilized by savage and civilized men—the roots, stems, sap, bark, fruit and seeds, and leaves. If we take the foliage, apparently the most insignificant part of the plant, how dependent are we on these for food, clothing, medicine, dyes, stains and various comforts. In tropical countries especially the domestic uses of leaves are almost innumerable.

The leaves of many Palms are largely employed for making hats. Those best known are Panama hats, made from the finely-plaited fibre of the leaves of a South American Screw Pine (*Carludovica palmata*). The tree occurs only on the slopes of the Andes. About 200,000 dozens of these hats are made in Ecuador and different states of South America, and they are distinguished from all others by consisting only of a single piece and by their lightness and flexibility; they may be rolled up and put in the pocket without injury. The plaiting of the hats is very tedious and troublesome; the coarse ones may be finished in two or three days, but the fine ones take as many months to plait. They vary in price, according to fineness and quality, from five dollars to a hundred dollars. The unexpanded fronds of *Livistonia australis*, prepared by being immersed in boiling water, are dried, and the fibre thus obtained is much valued for the manufacture of hats in Australia which much resemble the celebrated Panama hats.

The rough leaves of the Chumico (*Curatella Americana*) and of *Davilla lucida* are used for cleaning iron and polishing and scouring wood. *Curatella alata* is used in the West Indies for polishing bows, sabres, etc.; and in Brazil *C. sambaiba* serves all the purposes of sand-paper to the Indians for polishing their blow-pipes and war clubs. The leaves of *Celtis orientalis* are used for polishing horns in the East Indies.

The foliage of *Guaiacum officinale* is very detersive, and is frequently used in the West Indies to scour and whiten floors, which it is said to do better than soap.

Leaves sewn together are much used in India as substitutes for the plates and dishes of more civilized life. It is not always poverty that leads natives to use them in preference to metal or porcelain articles, as caste or custom has often some influence in the matter. The leaves principally used are those of the Egyptian Lotus; those of the Banyan by Brahmins, and the Plantain-leaf.

The leaves of *Bauhinia Vahlii* are used in the construction of the curious, rude leaf-bellows in Sikkim, with which the natives of the hills smelt iron. These leaves, when sown together, are used as plates, cups, rough table cloths, rain-hats and caps. The leaves are heart-shaped and above a foot in breadth, and the same in length. Sewn together with twigs, they also serve for baskets for holding pepper, turmeric and ginger, and are likewise used for thatching.

Under the name of "Chattahs," a kind of umbrella-hat or sun-shade is made in the East of the leaves of the *Licuala peltata* and the Talipot Palm. These Chattah hats are much worn by the plowmen and coolies of Bengal and Assam.

The large fan-shaped leaves of the Talipot Palm are like those of the Palmyra Palm, carried over the heads of people of rank as an umbrella, and are also used for making books and for various domestic purposes. They are also cut up into neat bracelets, worn by Santal girls in India. Those of *Vanda Roxburghii*, split, are also worn by them as anklets. Those of another species, *Borassus Æthiopicus*, occur as much as twelve feet across, and serve also for the manufacture of baskets, mats, ropes and sieves. The leaves of *Nipa fruticans* attain a height of fifteen to twenty feet, presenting a very handsome appearance, resembling the fronds of huge Ferns. This graceful eastern Palm is utilized in various ways, the principal being in the manufacture of thatching for house-roofs. This manufacture is quite an industry of itself, and affords employment to many natives, chiefly women, the men simply bringing cargoes of the fronds to the women, to be stitched with split rattans, and made up. Atap roofs are the best adapted for these climates, for while the winds are never strong enough to blow them away, they afford the coolest protection against the sun of any kind of roofing known.

The leaves of the Palmyra Palm were formerly used like paper, to write books on, and to this day they are applied to this purpose in Orissa, southern India, and Ceylon, where an iron style is employed to write upon them; in Bengal young children use them to write the alphabet lessons on. They are largely employed for making pans, bags, winnows, hats, umbrellas, and for thatching, etc. The leaf takes a dye well and is worked up in Madras into pretty colored patterns in baskets and mats.

The slips of Talipot and other Palm leaves are coming into European commerce for the manufacture of ornamental

braids, and in the construction of straw or Leghorn hats. The fibre obtained from the base of the leaves of the Chusan Palm is used by the Chinese for making hats and coarse clothing. The sale of Palm leaves for decorative purposes in the towns of Elche and Alicante, in Spain, produces a considerable income to the towns.

Kadjan mats, manufactured out of Nipa leaves, are indispensable for traveling purposes; packed up in the smallest compass when not required, each mat is capable of affording sufficient cover at night for two or three persons, either in boat or forest-journeys. They also form, almost exclusively, the material for side-walls and divisions in houses. The young leaf unfolded and dried, under the name of Roko, forms the favorite covering for cigarettes in the Malayan Peninsula in preference to paper.

The large leaves of the Teak-tree are used for plates, for packing, and for thatching. The leaves of *Cordia myxa* are employed as plates in Pegu, and to cover Burmese cheroots. In Bangalore the leaves of *Canna Indica* are used by the natives in lieu of plates, to serve their Millet puddings and other dishes on.

The leaves of the Papaw-tree are employed by the negroes in washing linen, as a substitute for soap. They have also the property of rendering meat wrapped in them tender, owing to the alkaloid papain which they contain, and which acts as a solvent.

For cordage and other textile purposes, numberless leaves are used, and they serve very generally for packing and wrapping up small parcels in India.

In Guiana, Tibisiri fibre is obtained from the inner surface of the spiral leaves of the Ita Palm (*Mauritia flexuosa*); it is used by the Indians for making hammocks, etc. The leaves are cut before they are open, and the midrib separated by drawing each division of the leaf through the finger and thumb. After drying, the fibre is ready for use without further preparation. About a quarter of a pound may be procured from each leaf, and if the central leaf is left uninjured, no evil effect is produced on the tree. Bags or matting could be cheaply and easily made from this fibre, as well as hats similar to those known as Panama.—*Gardeners' Monthly.*

Cooking Quamash.

WHILE camped at Deer Park, on the Lower Arrow Lake (an expansion of the Columbia River), a week since, I had an opportunity of witnessing the Indian mode of cooking *Camassia esculenta*. This species of Camassia is very abundant along the Columbia River, between the Upper and Lower Arrow Lakes, flowering there during the first weeks of May. The bulbs were collected by the Indians before the seed was fully matured, at which time they consider them at their best. The party I speak of had between twenty and twenty-five bushels of them at the lowest estimate. For two or three days before cooking was begun, the women of the party were engaged in cutting and carrying to camp branches of the Alder and Maple (*Alnus rubra* and *Acer glabrum*). Several bundles of the broad leaves of *Lysichiton Kamtschatcense* (Skunk-cabbage), and two or three of *Alectoria jubata*, the black hair-like lichen that grows in profusion on *Larix occidentalis*, had been brought with them.

Everything being ready, the men of the party cut down a huge Pine for no other object, apparently, than to obtain its smaller branches, as no other portion of it was used. A hole about ten feet square and two deep was then dug in a gravelly bank near the lake-shore, which was filled with broken Pine branches. Upon these were piled several cords of dry cedar and pine, and this was covered over with small bowlders. The pile was then lighted in several places, and left for some hours to take care of itself. When the Indians returned to it the stones lay glowing among a mass of embers. The few unburnt pieces of wood which remained near the edges were raked away, and the women with wooden spades banked up the sides of the pile with sand, throwing enough of it over the stones to fill up every little crevice through which a tongue of flame might be thrust up from the coals that still burned beneath the stones. Then the whole was covered with the Maple and Alder boughs to the depth of a foot or more after they had been well tramped down. Over these were placed the wide leaves of the Skunk-cabbage until every cranny was closed. Sheets of Tamarac-bark were then spread over the steaming green mass, and upon these the bulbs were placed. About half of them were in bark baskets closed at the mouth, and each holding about a bushel and a half. These were carried to the centre of the pile. The lichen of which I have spoken was then laid over the unoccupied bark, having been well washed first, and over it were strewn the bulbs that remained. The whole was then covered with boughs and leaves as before and roofed with sheets of bark. Upon this three or four inches of sand was thrown, and over all was heaped the material for another fire, larger even than the first one. When this was lighted the sun was just setting, and it continued to burn all night.

The next morning our camp was moved away, and I was unable to see the results of the day's labor. I was told, however, by one of the Indians who could speak a little English, that their oven would be allowed a day in which to cool, and that when opened the bulbs in the baskets would have "dissolved to flour," from which bread could be made, while those mixed with the lichen would have united with it to form a solid substance resembling black plug tobacco in color and consistency, which could be broken up and kept sweet for a long time.

Sproat, B. C. *James M. Macoun.*

An Experience with Rosebugs.

THE Rosebug, or, more correctly, Rose-chafer, was known as a difficult subject to Harris and Fitch and the entomologists of their day. They gave us a fair life history of the insect, to which Dr. Riley has quite recently added a good description of the larva, with figures, as well as some further biological notes. Each of these authors seems to have been fully aware of the difficulty of dealing with the insect, and the recommendations as to remedies are vague and unsatisfactory. Fitch gives an excellent description of the way in which the invading swarms cover everything, apples and other fruits becoming so covered that a mere mass of yellow sprawling beetles indicates that here probably is a fruit!

Southern New Jersey has been invaded for several years past by swarms of this pest, which cleared out the grape crops so completely year after year, that many vineyards have been taken out and others will be abandoned unless some practical remedy is found. With the view of testing the value of the published methods I spent some days in the invaded districts. I found that, as a rule, the insects did not breed in cultivated land, but that on the other hand the entire sand region is a vast breeding ground, pupæ being found even at the very seashore. From these breeding places the insects emerge and fly about, searching for food, the winds apparently influencing their direction to some extent. Vineyards are therefore generally invaded from the edges, newly arriving hordes ever advancing further. They are not at all dainty in food habits, but do show some preferences. Sumach is readily eaten; Apples and Cherries are tidbits; Sour Gum attracts them by the million; Hollyhocks are eaten, stems and all; Roses are high favorites, while the Peach is not so much liked. In fact, there is scarcely a plant they will not eat, though flowers and some fruits are always preferred. A field of Blackberries at Colonel Pearson's place was swarming with them, and the Colonel told me that last year his Strawberry patch looked yellow where red ought to have been seen.

Pyrethrum has been highly recommended for these insects. I tried it first at the rate of one ounce to one gallon of water. It acted in about ten minutes, the majority of beetles tumbling from the Blackberry-bushes to the ground. Only a few, however, were really stupefied, and most of them began crawling back upon the plants immediately, where, as soon as the sun dried them, they fed as freely as before. Then I increased the dose to one-fourth of a pound to a gallon of water. The effect was more prompt, the resulting stupor more lasting, but half an hour later all were again feeding on blossoms that were yellow with pyrethrum! The insects will live for an hour or two in the pure powder, and recover when removed from it. Tobacco seems to give an added relish to the plants upon which it is applied. Sprayed on at the rate of a pound to the gallon, the powder being added to the decoction, the beetles never stopped eating. London Purple applied as strong as the grape would bear did not prevent the destruction of the blossoms, but left a sprinkling of dead beetles on the ground. Powdered naphthaline, pure, and mixed with carbonate of lime, was dusted over a row of vines with the most approved appliance, so as to leave the vines white. This had not the slightest effect, so far as the blossoms are concerned, and the leaves were eaten from below instead of from above. Carbolated lime was equally ineffective, as was also the pure hydrate of lime, which is better than air-slaked lime, as a rule. Hellebore applied pure is utterly ineffective. Mrs. Treat showed me some Foxgloves in her garden, each plant surrounded by dead Rosebugs. Colonel Pearson thereupon made an infusion of leaves, which was ineffective, while I fed a lot of the beetles for a week upon Roses which were

soaked in a saturated solution of digitaline! Quassia is useless, and so were all the copper compounds, the saturated solution of lime, the iron solutions, the kerosene emulsion; and, in fact, everything else that was applied. All this goes to show what a tough subject we have to deal with. Corrosive sublimate will kill him readily, but, unfortunately, kills the plants as well. A sludge-oil soap, obtained too late to test thoroughly, kills the beetles without injuring plants. It is probable that in this we have a good remedy for the Macrodactylus if it can be made cheaply enough.

Of the mechanical means tried, an umbrella with a sack attached into which the beetles were jarred proved satisfactory, and this can be used at all times of the day, since the beetles cannot fly out of a sack as they could off a sheet or from the ground.

My conclusions are that the only way to save a crop of grapes is to plant Spiræa, Roses or Blackberries between some rows of the vineyard and by persistent collecting keep these plants free and attractive. How persistent one must be is shown by the fact that though Colonel Pearson one year went over his vineyard once a day killing beetles, yet they destroyed his grapes almost completely. This year, though, he daily cleared his Rose bushes by applying the sludge-oil soap, yet every bud was eaten.

The Clintons many of them bloom and set before the Rose-bug arrives in force; they are then generally safe, since the beetles prefer the foliage to the grape. The Concord buds are just right for the insects and they go completely. The Concord foliage is not relished and only the upper surface is eaten. Very late blooming varieties are also fairly safe, and this indicates another method of dealing with this pest—i. e., plant very early or very late blooming varieties while supplying something for the insects to eat. I may say that the suggestion that Spiræa be planted as an attraction is Mr. Fuller's, and that he reports that he saves his grapes in this way.

There is one glimmer of hope ahead! Indications of a decrease in the number of the insects are observed, and natural means may end the invasion. Some eighteen or twenty years ago there was a similar invasion, lasting four or five years. The present flood began about four years ago, and in some places is undoubtedly on the decrease. Colonel Pearson did not suffer nearly as much this season as he did last season, and others have made the same statement.

Rutgers College. *John B. Smith.*

Notes on North American Trees.—XIX.
Description of the Wood of Certain Species.

Acacia Farnesiana. Wood very hard and heavy, close-grained, containing many evenly distributed open ducts; layers of annual growth hardly distinguishable; medullary rays thin, numerous, conspicuous; color rich reddish brown; specific gravity, 0.8220, 0.8387, average 0.8304; ash, 1.15, 1.18, average 1.17; weight per cubic foot, 51.74 pounds; fuel value, 0.8207. Collected by C. G. Pringle in the valley of the lower Rio Grande.

Acacia flexicaulis. Wood exceedingly heavy and hard, compact, close-grained, satiny, containing many minute evenly distributed open ducts; layers of annual growth hardly distinguishable; color very dark rich reddish brown slightly tinged with purple, the sap-wood clear bright yellow; specific gravity, 1.0482, 1.0289, average 1.0386; ash, 3.30, 3.27, average 3.28; weight per cubic foot, 64.72 pounds; fuel value, 1.0046; unsurpassed in value as fuel by the wood of any tree of the lower Rio Grande valley, and used for pulleys, rollers and other objects demanding great strength and solidity. Collected by C. G. Pringle in the valley of the lower Rio Grande.

Prunus ilicifolia, var. *occidentalis.* Wood heavy, hard, very close-grained, satiny; layers of annual growth plainly marked; medullary rays thin, conspicuous; color pale reddish brown, the sap and heart-wood hardly distinguishable; specific gravity, 0.8340, 0.7654, average 0.7997; ash, 0.84, 0.95, average 0.90; weight per cubic foot, 49.84 pounds; fuel value, 0.7927. Collected by T. S. Brandegee on Santa Cruz Island, California.

Cratægus Crus-galli, var. *berberifolia.* Wood heavy, hard, very close grained, satiny, susceptible of a good polish; layers of annual growth hardly distinguishable; medullary rays numerous, very obscure; color brown tinged with red, that of the sap-wood rather lighter; specific gravity, 0.6111, 0.6141, average 0.6126; ash, 1.52, 1.71, average 1.62; weight per cubic foot, 38.17 pounds; fuel value, 0.6027. Collected by C. E. Faxon and C. S. Sargent near Opelusas, Louisiana.

The wood of the variety is considerably lighter than that of the species, as determined by the Census investigations (average 0.7194).

Lyonothamnus asplenifolius. Wood very heavy, hard, close-grained, compact, satiny, susceptible of a good polish; layers of annual growth hardly distinguishable; medullary rays numerous, thin, obscure; color bright clear red faintly tinged with orange; specific gravity, 0.8358, 0.7700, average 0.8029; ash, 0.53, 0.49, average 0.51; weight per cubic foot, 50.05 pounds; fuel value, 0.7988. Collected by T. S. Brandegee on Santa Cruz Island, California.

C. S. Sargent.

New or Little Known Plants.
Ilex longipes.

THE species of Ilex fall into several natural groups which are readily separable when the necessary characters are at hand, but it is hard to satisfactorily discriminate between certain of the component species of these groups. The plant that Mr. Faxon illustrates in this number is one of these (p. 345). Drummond, Beaumont and Buckley collected it many years ago in the south, and their specimens mainly appear in herbaria as *I. decidua*, of which species Dr. Gray held it to be a variety. Some years since it was found in Tennessee by Dr. A. Gattinger, who referred it to *Nemopanthes Canadensis* in his list of Tennessee plants, but, on sending it to Dr. Chapman, received the above manuscript name for it.

In its general characters *Ilex longipes** is quite similar to *I. decidua*, but differs in its elliptical or broadly lanceolate leaves, sparingly ciliate, with short, broad hairs, but otherwise glabrous, whereas those of the latter are broadest toward the apex, so as to be spatulate or oblanceolate, and apparently always pubescent on the under side, at least on the midrib. The most striking difference, however, and that to which the species owes its name, is in the fruiting pedicels, which, in this species, are about an inch long, whereas in *I. decidua* they scarcely exceed the drupes in length.

So far as is shown by herbarium specimens, *Ilex longipes* occurs from North Carolina and Tennessee southward to Alabama and Louisiana. It is not yet known in cultivation.

Shaw School of Botany, St. Louis. *W. Trelease.*

New Orchids.

IN complying with a request to furnish occasional reviews of new Orchids my purpose will be to give a summary of the novelties described in European horticultural publications. Many of the plants described have little value from a horticultural point of view, but it may be best to include most of the novelties and leave to cultivators the choice of kinds suited to their various tastes and requirements. A few Orchids not new may be sufficiently rare or interesting to deserve notice.

ÆRIDES AUGUSTIANUM, Rolfe, is one of the earliest novelties described in the present year. It was discovered in the Philippines by M. Auguste Linden, after whom it is named. It is allied to *A. Rœbelenii*, Rchb. f., but the flowers are of a light, rosy tint instead of yellowish white. It is described in the *Gardeners' Chronicle* on January 4th, p. 9, and also figured in that journal on February 22d, p. 233, fig. 36, and in *Lindenia*, vol. 5, p. 39, t. 210.

CYPRIPEDIUM × NIOBE, Rolfe, is a very elegant hybrid raised from *C. Spicerianum* fertilized with the pollen of *C. Fairieanum.* It was raised by Mr. Seden for Messrs. James Veitch & Sons, of Chelsea, and was awarded a first-class certificate by the Royal Horticultural Society, December 11th, 1889.—*Gardeners' Chronicle*, January 4th, p. 9.

ANGRÆCUM ICHNEUMONEUM, Lindl., is a curious little plant which has long been known to science, but which has been

* *Ilex longipes*, Chapman, ined.—Trelease, in *Trans. St. Louis Acad. Sci.*, v. (1889), 346.

somewhat recently introduced to cultivation. The flowers reminded Dr. Lindley of an ichneumon fly, hence the name. The curiously inflated spur is much like the bladder of a small fish. The white flowers are borne in long, pendulous racemes, yet the plant is rather curious than beautiful.—*Gardeners' Chronicle*, January 11th, p. 38.

CYPRIPEDIUM × CYTHERA, Rolfe, is a pretty little hybrid, raised in the collection of Mr. R. H. Measures, of Streatham. It is said to be derived from *C. Spicerianum* fertilized with the pollen of *C. purpuratum*. The flowers much resemble the former, and curiously enough there is no trace of tessellations in the leaves, yet the dwarf habit and some characters in the flower appear to be derived from the other parent.—*Gardeners' Chronicle*, January 18th, p. 73.

DENDROBIUM × XANTHOCENTRUM, D. × JUNO and D. × LUNA, are three hybrids raised in the collection of Sir Trevor Lawrence, which received first-class certificates at a meeting of the Royal Horticultural Society on January 14th last. The first, which resembles *C.* × *Schneiderianum*, was obtained from *D. Findlayanum* and some unknown species, the second from *D. Wardianum* and *D. Linawianum*, and the third from *D. Findlayanum* and *D.* × *Ainsworthii*.—*Gardeners' Chronicle*, January 18th, pp. 87, 88.

CYPRIPEDIUM × HERA, Rolfe, was raised in the collection of Mr. R. H. Measures, of Streatham, from *C. villosum*, crossed with the pollen of *C. Spicerianum*. Thus it is identical with *C.* × *Lathamianum*, a fact overlooked at the time the other was described.—*Gardeners' Chronicle*, January 25th, p. 105.

CALANTHE × VEITCHII ALBA, Rolfe, is a very beautiful hybrid raised in the collection of Sir Charles Strickland from *C. vestita* and *C. Rosea;* thus it has either the same or the inverted parentage of *C.* × *Veitchii*. It is, however, markedly different, having the strongly four-lobed lip of *C. vestita*, while the flower is of the purest white, without any trace of color anywhere. It is a great horticultural acquisition.—*Gardeners' Chronicle*, February 1st, p. 132.

PHALÆNOPSIS × CYNTHIA, Rolfe, is a handsome natural hybrid between *P. Aphrodite* and *P. Schilleriana*, which appeared in the collection of Mr. F. Wigan, of East Sheen. It approaches the last named species in most of its characters, the front lobe of the lip being almost identical in character, while in *P.* × *leuccorrhoda* and *P.* × *casta*, which have the same parentage, that organ is long and slender, as in the other parent. A paler variety with the same structure has since appeared with Messrs. Hugh Low & Co.—*Gardeners' Chronicle*, February 1st, p. 132; February 22d, p. 227.

CYPRIPEDIUM × NORTHUMBRIAN, *N. E. Br.*, is a hybrid raised in the collection of Mr. D. O. Drewett, between *C.* × *calophyllum* (itself a hybrid between *C. barbatum* and *C. venustum*), and *C. insigne Maulei*, the latter being the pollen parent. —*Gardeners' Chronicle*, February 8th, p. 160.

CYPRIPEDIUM SIAMENSE, Rolfe, is a species introduced by M.

Fig. 46.—Ilex longipes.—See page 344.

J. Garden, of Paris, from the neighborhood of Bangkok, in Siam. It is allied to *C. callosum*, and a colored figure which appeared in the *Moniteur d'Horticole* for March 10th suggests the question whether it is botanically distinct from that species. —*Gardeners' Chronicle*, February 8th, p. 161.

Kew. *R. A. Rolfe.*

Cultural Department.

Notes on Shrubs.

SHRUBS which have the habit of blooming in the early part of July are not numerous in species in this latitude and every one which makes any show is valuable even if it has defects which would cause an earlier flowered species to be considered of little value. There appears to be a slight cessation of blooming among the shrubs just now, but a little later a series of late flowering species becomes quite conspicuous.

Itea Virginica, for which no more popular name than its generic one appears to have been invented, is a rarely cultivated shrub which is especially valuable for blooming at this season, and it usually attains its best condition in the first week of July. It is a dwarf shrub of slender habit and under cultivation it seems to rarely grow to a height of more than two or three feet. The flowers are borne in dense, terminal, almost perfectly cylindrical racemes from two or three to four or five inches in length, and about or nearly three-fourths of an inch in diameter. Although the pointed, narrow petals are white or creamy white, a greenish white effect is given to the racemes by the stamens and pistils, and the outside of the flowers, which are light green in color. The fragrance seems to have something of the qualities of the wild Grape and of Clethra blossoms, but is not so strong or sweet as either. The rich color assumed by the foliage in autumn is another quality which makes these plants desirable for the shrubbery. Although a native from New Jersey southward, the Itea is perfectly hardy in Massachusetts. Where naturally-grown plants cannot be obtained and transplanted from their native habitat they may be propagated in the usual way by seed, by cuttings, or by division of the roots, which slowly spread and form clumps of stems.

Probably the most conspicuous flowering hardy shrub at this season is our common Elder (*Sambucus Canadensis*), which blossoms here in the last of June and first week or two of July just as the flowers of one of the latest Viburnums (*V. molle*) are fading. The common Elder is usually considered valuable on account of its general freedom from disease. But there are complaints this season from various parts of the state of serious destruction caused by the Elder Rust (*Æcidium Sambuci*), both to plants cultivated for ornament and those growing wild. This fungus attacks both the leaves and young shoots, and its effect is to cause large swellings and distortions of the parts diseased. When the spores are ripe the swellings have a dusty yellowish appearance. So serious has this disease appeared in some localities this season that it seems as if the destruction of the Elders must inevitably follow. No remedy can be at present suggested except to cut off and at once burn the affected portions before the spores reach maturity. The Elder Rust is found over a large extent of the country, probably wherever the Elder is indigenous.

Notwithstanding the many beautiful hybrids and other forms of Rhododendrons which have been produced by the skill of the hybridist or horticulturist, there are few which possess a greater charm and delicacy of color than our native *R. maximum*. Its value is enhanced in the eyes of all admirers of beautiful flowers by its habit of blooming in July when it has no conspicuous competitors, the blossoms of nearly all other Rhododendrons having long since faded. But besides this evergreen Rhododendron we have two other native deciduous species, belonging to the Azalea section of the genus, which bloom at about the same time. These are our common Clammy Azalea or so-called White Swamp-Honeysuckle (*R. viscosum*), and the Smooth Azalea (*R. arborescens*), which is not found so far north. The flowers of the Clammy Azalea are comparatively so small that they are not so valuable for ornament as they are for the fragrance which they exhale. The plant grows freely and flowers profusely in cultivation, becoming a tall, upright-growing shrub.

But the Smooth Azalea, figured on page 401 of the first volume of Garden and Forest, is greatly superior to *R. viscosum*, inasmuch as its flowers combine fully as rich a fragrance, with more than double the size, and, besides, are much less clammy. Although the flowers are partly hidden by the foliage, they are not more so than is necessary for protection from the withering influence of the hot summer sun. The corollas expand in their widest part fully two inches across from tip to tip of petals. They are usually white, but vary in some plants toward a decided rosy tinge of color. The long stamens and pistils are bright red, becoming paler or light pink toward the base, and the anthers are yellowish. In this climate the blossoms are usually in their best condition during the last week of June and first week of July, and may be counted but very few days in advance of those of *R. viscosum*. Plants of *R. arborescens*, raised from seed collected in North Carolina, and now ten years old, are bushes from three to four feet high, with as great a spread of branches. They are perfectly hardy, but, as a rule, not very profuse in their bloom. In its native habitat it is said to become fifteen or twenty feet in height, but its low spreading habit in open cultivation here is in striking contrast with the more erect habit of plants of *R. viscosum* of the same age. *R. arborescens* does not appear to have been much used in hybridizing with other species.

Arnold Arboretum. *J. G. J.*

The Strawberry Season.

THE Strawberry season of 1890 was a short one. On June 3d I picked the first ripe berries of Pearl, Jessie and Bubach. I could probably have done this on the 1st had not my friends, the birds, been sampling them since they began to color. The Bubach had probably been overlooked, which accounts for my ability to pick it with the others, as it is generally two or three days later. On the 5th I was able to pick three quarts for the table and the season was fairly open.

I find on reference to my notes of last season that this was three days later than last year, and the last picking of any amount was made on the 21st, though there were a few late comers until the 26th.

The quality of the fruit was good as long as sunny weather prevailed. On the 12th, 13th and 14th rain fell freely, and the three following days were dull, so the abundance of moisture and the absence of sunshine soon caused a depreciation in flavor, and bad color. The berries at once became soft and decayed quickly, and the blight was on hand to do its fatal work. This reduced the crop very materially and necessitated great care in picking.

The Pearl still suits me for size, shape, beauty, vigor and quality. It ripens evenly and the berries from the largest to the smallest are generally perfect in shape and well filled out.

The Jessie occasionally produces a large berry of cockscombed shape, but on the average the fruit runs no larger and yields less abundantly on my soil. The chief fault of the Jessie with me is its uneven ripening. For the first week, at least, one third or more of the berries which were crimson on one side were white or green on the other. This adds very much to the time and labor of picking if one is careful to avoid picking the unripe ones. Toward the close of the season this feature is less apparent. Mr. Charles A. Green, the introducer of this berry, tells me that this characteristic does not develod at Rochester.

The Bubach, as a rule, is a little later than Jessie. It is a vigorous grower and productive. The first berries to ripen are generally twins, but perfect in shape. The texture and quality is not quite as good as the preceding, and the rain and absence of sunshine told on them in this respect more severely. For productiveness and large size under favorable conditions this variety will give great satisfaction even though the quality is a little inferior to that of others.

Jewell is very much like it in texture and quality and more subject to rust, so much so as to render it quite worthless with me, and each successive season it seems to be more subject to these fungi. If this proves to be the case with Bubach it will be short-lived. Last season I did not notice that it was at all affected, and I had higher hopes of its future than I have now. Belmont produces a few large berries at first, but like the Sharpless the later settings are abnormally developed and unsightly. A poor cropper it is, too, with me.

I have many newer varieties, but a single season's experience will not justify any judgment of their merits.

Montclair, N. J. *E. Williams.*

Among the more recently introduced Strawberries none are proving more generally satisfactory in our state than the Warfield No. 2, Jessie and Haverland. The peculiar merits of the Warfield lie in its deep, brilliant and glossy color, which gives it a most attractive appearance, the firmness of its flesh and skin, which enables it to endure carriage remarkably well, and its great productiveness, which renders it a very profitable variety to grow.

The Jessie surpasses the Warfield in size and quality, and possesses the further advantage of being perfect in flower.

At the recent summer meeting of the Wisconsin State Horticultural Society, the Warfield and Jessie were pronounced the most profitable market varieties, the Jessie being used as a fertilizer for the Warfield. The superior quality and large size of the Jessie render it a favorite garden variety wherever it has been introduced, while in productiveness it is little inferior to the Warfield, or any other variety thus far tested.

The strong point of the Haverland lies in its great productiveness. Aside from this it would hardly attract attention. Bubach No. 5, though very fine as a berry, does not appear to possess the vigor and prolificacy of the above named sorts. The Cloud does not promise well. I have not yet seen a favorable report from it in Wisconsin. Gandy is proving fairly productive of large and good looking fruit. Gypsy is very promising as a first early sort. It ripened with the earliest bearing of the Crescent, and while not equal to the latter in productiveness, very far surpasses it in quality. Lady Rusk is thus far disappointing. It is only moderately productive, and the fruit is small, deformed and insipid. Welch promises well. The plant possesses remarkable vigor and is quite productive. The fruit is large and of good quality, but its pale color will hardly favor it as a market variety. Pineapple is of high quality and fairly productive, but like the above its pale color will not commend it for market.

In a few localities the Wilson still maintains popularity, but it is generally so much injured by rust as to be no longer profitable. Some reasons appear for believing that the liability of this old standard to the rust is due in a measure, at least, to an enfeebled condition of the plants. Mr. J. M. Smith, of Green Bay, has been remarkably successful with the Wilson, and has for years set out his new beds only from plants taken from thrifty young beds that have not yet borne a crop. In the spring of 1889 I procured some plants of the Wilson from Mr. Smith and about the same time some of the same variety from a nursery company. These were given similar care, but the plants from the nursery have been already nearly destroyed by the rust, while those received from Mr. Smith are almost free from it.

University of Wisconsin, Madison, Wis. *E. S. Goff.*

Our Strawberry crop is now just past its best (June 30th); but for the excessive heat of the past week we should have had most excellent picking till after the 4th of July. I think it an underestimate to put the loss from sun-scald at twenty-five per cent., besides the softening of as many more, which we could only save by shipping them to a near market; still, in spite of the excessive rainfall and this continued heat, the crop, even at from five to eight cents a quart, has paid better than any of its predecessors for ten years.

The Silk Cotton-Tree at Nassau.—See page 341.

The six best-paying varieties are Jessie, Bubach No. 5, Warfield No. 2, Haverland, Crescent and Miner's Great Prolific. The Jessie is worthy first place here, because of its perfect blossom, large size, good quality and productiveness. After ten days' picking, without reserve, I stepped to the end of one matted row, two feet wide, and picked eight feet of the row for two quarts, and in each box there were a number of berries as large as hen's eggs; this was without selection. Haverland has suffered worse with the heat and sun-scald, and being soft and of poor quality, will not take high rank, though more productive and larger than Crescent.

We have potted Wilson, and still plant it for pollen, but unless the rows have at the rate of 100 loads of manure to the acre, it is not a paying berry; and among the fifty kinds we grow, of old varieties Miner's Great Prolific is ahead this season in size, productiveness and for pollen. For a late berry we find nothing superior to Gandy.

Janesville, Wis. *George J. Kellogg.*

Notes on American Plants.

THE Maryland Pink Root (*Spigelia Marilandica*) is an attractive plant at the time of flowering, and its long red corolla is about as conspicuous as that of the Cardinal Flower. It is from six inches to a foot and a half high, bearing several tubular flowers over an inch long. The tubular or lower portion of the flower is about a third of an inch in diameter, tapering toward the base. The opening at the top is about half an inch wide and yellow inside. It is a herbaceous perennial, a native of rich woods from Pennsylvania to Wisconsin and southward. It likes a light, loamy soil in the shade.

Sedum pulchellum, a native of the southern states, is a pretty garden plant forming dense beds. Its stems are somewhat weak and often trailing, and are about eight inches long. At the summit is a several spiked cyme of pale rose-purple flowers. It is of little or no value for cutting, but is a pretty border plant, not only when in flower, but its dense foliage is handsome the season through. It needs a light soil and sunlight.

Calochortus Howellii, a newly discovered species from Oregon, has handsome white flowers an inch wide, with dark brown beards on the lower inner half. But the plant is not healthy in our light, loamy soil, and the leaves die before the flowers open. It might thrive in a heavier soil. We have known it but one season.

Pentstemon lævigatus, var. *digitalis*, is a desirable native species with larger and handsomer flowers than the more common *P. pubescens*. It is a native of rich, dry soils in the southern states. It grows two or more feet high, bearing numerous pale purple or white flowers an inch long. Though a native of a warmer climate, it seems perfectly hardy here and is certainly worthy of cultivation.

One of the easiest California Lilies to grow in this climate, and an attractive one, too, is the *Lilium pardalinum*. It seems to do well both in heavy and light soils, and unlike some of the species from the Pacific coast, the foliage shows much health and freshness during most of the summer. Its height here is about two feet, and it bears one to several (according to the strength of the bulb) good-sized, orange-red and spotted flowers, the divisions of which turn back to nearly meet the stems on which they are borne.

Another good species for light, loamy soils is *L. rubescens*, from the same state. This one, however, is more particular about its location, and in a clay loam it never seems to thrive with us. It is a valuable species bearing a dozen or more erect, nearly white, fragrant flowers with dark brown spots. With age the flowers turn to a reddish purple. They resemble those of the *L. Washingtonianum* in shape, size and color, but those of the latter are turned downward. This last species is not a healthy one in our light soil, and both flowers and leaves seem to die even before the flowers have opened.

Another interesting species from this state is the *L. Humboldtii*. It seems to need at least two years to become established. Then, if well fed, it will give a fine display of its large salmon-yellow and spotted flowers. We have found well decayed chip-dirt, sifted and applied as a top dressing, the best fertilizer for this species, and a soil having a slight mixture of clay seems to suit it.

Southwick, Mass. *F. H. Horsford.*

Rose Notes.

A LARGE number of Roses have already been planted in preparation for next winter's cut-flower supply, some of the Hybrids for early forcing having been planted in the beginning of April, and in some progressive establishments the Teas followed shortly afterward.

Of course it requires some moral courage to clear out a Rose-house so early in the season, especially if the plants are in fair condition and still producing a respectable crop of flowers, but it undoubtedly gives the new planting a much better chance to become well established and to make some strong and vigorous growth before the days get too short. It is well to remember, however, that even though the Roses have been planted out in April or May it is not advisable to crop them too heavily in October, for the mid-winter crop may be correspondingly light if the plants are allowed to overtax their strength. Disbudding should therefore be regularly attended to until the flowers are needed in quantity. Strong, healthy young plants in three or four-inch pots are preferable for planting out, as the weak, stunted ones sometimes used as a makeshift for this purpose seldom start away properly, and as a consequence prove unsatisfactory for winter-blooming. It may be repeated that the Roses when planted out should always be moist at the root, for when the old ball of earth is dry at the time of planting it will be very difficult to moisten it afterward without making the soil in the bench or bed too wet.

As regards the two chief systems of planting Roses for winter flowering—that is, either the shallow bench system or the solid bed plan—it may be said that the first named is decidedly the most in favor, and it is now quite an exception to the rule to see a house planted on the solid or deep-bed system.

Neat staking and training adds much to the appearance of a Rose-house, and is certainly not detrimental to the plants, and this may easily be arranged by adopting the method used in commercial houses for several seasons, where the plants are supported by wires stretched from one end of the bench to the other. The wires are attached to a light post or other suitable support at each end of the bench, and the plants are tied to the wires as it becomes necessary. Stout galvanized wire is best for this purpose, as it does not rust out so quickly as the plain wire, and with proper care at the time of replanting it will last for three or four seasons. This makes a much more orderly arrangement than the old-fashioned method of individual staking, and unless the benches are too wide it does not interfere with the cutting of the flowers or any other necessary routine work.

The usual long list of new Roses for 1890 has been presented by the European growers, and numbers some seventy or eighty sorts, the larger proportion of which are classed among the Hybrids, though the list of Teas is also extended by some twenty-five names, several of which are described as carmine or red in color. It is also stated that a new pink Tea is to be introduced next autumn which is claimed to be far superior to Catherine Mermet. This promised acquisition is of French origin, and has been christened Maman Cochet.

Among the Hybrids, Augustine Guinoisseau will be looked upon with interest. It is a new sport from La France, which is described as being identical with its parent in all respects save in color, which is pure white. If this should prove as good as described it would probably be a valuable variety, but it may be safely estimated that not more than ten of the new Roses of 1890 will prove worthy of general cultivation unless the list has been much more carefully sifted than in previous years.

Holmesburg, Pa. *W. H. Taplin.*

Border Pinks and Carnations.

A GARDEN is never too well supplied with these valuable flowers and no plants better repay the trouble necessary in their cultivation. The early Fringed Pinks are of a very sturdy constitution, and the stems being thin and wiry are very little affected by alternate freezing and thawing. The white variety is especially valuable and very fragrant. The Scotch gardeners have originated many fine varieties, which they divide into "show" and "laced" sections, the former being self-colored and the latter having rosy red or purple lacings. They are readily grown from seed, blooming the second season, and a good strain will show great variety in markings, with either smooth or fringed petals. They are fragrant and a large proportion will be double.

The border Carnations follow the Pinks in bloom, and very good varieties may be readily secured the following season from seed sown in the spring, for they seem perfectly hardy the first winter or when in a young state. After the wood becomes heavy and hard they are not reliable, and if it is desirable to save any they should be layered or the tops should be struck after blooming. A good strain of seed should be sown each spring with the annuals, and seedlings should be grown along till fall, when they may be planted in their blooming quarters. A few evergreen boughs make good protection for winter, though this is hardly necessary. In late June such plants will give a wealth of bloom, and though a proportion will prove single, one is sure to secure some attractive double ones. At the worst one can have abundance of bright, fragrant flowers with a good supply of their own foliage—a pleasure usually denied us by the vender of Carnations. If one does not care to trouble with this biennial treatment of the Carnation, some very choice proved varieties may be had from the florists. Of these a good selection would be Old Crimson Clove, or its dwarf variety, Paul Engelheart, Blush Clove, Gloire de Nancy (white), Mrs. Reynolds Hole (salmon), Pride of Penshurst (yellow). The layering system should also be followed with these if certain success is desired.

The "Carnation Grenadin" of the seedsmen is also desirable, being scarlet (of a variety of shades) and usually double.

Elizabeth, N. J. *J. N. Gerard.*

Heleniums.—Of North American Composites there are few more valuable for garden culture than these plants. Their flowering season lasts over the greater portion of the summer, beginning in May with *H. Hoopesii*, and ending with *H.*

autumnale late in fall. *H. Hoopesii* is perhaps the showiest and best of all, and should be in every garden of hardy flowers. It is as showy as *Coreopsis lanceolata*, and has stout, erect stems, with numerous large, bright orange-colored flowers, just when no other similar flowers are to be had. The flowers are larger than those of the Coreopsis, and as they are of good substance stand well when cut. *H. Bolanderi* is a new species, one of Dr. Bolander's discoveries in north-eastern California, where it grows in low grounds near the coast. This species flowers in June soon after *H. Hoopesii*, and makes a nice succession to that species. The flowers are not as large, but are of a pleasing bright yellow. The ray florets are notched at the end, and give the flower-heads a pretty appearance, not unlike those of the Gaillardias. We have noticed some variation in the color of the flowers in a batch of seedlings, some being much darker than others. Both the above flowers have black discs or centres. *H. Bolanderi* is perfectly hardy here, growing about eighteen inches high. It is free flowering and useful for cutting, and like *H. Hoopesii*, it comes readily from seed sown in pots. When large enough these should be planted where they are to flower, for, with Heleniums, as with many other herbaceous perennials, the less disturbance during the earlier stages of the plant's life, the better will be the bloom when the flowering period arrives. These Heleniums will not flower the first year from seed, but if well treated a quantity of bloom will be produced the second and following years.

South Lancaster, Mass. *E. O. Orpet.*

Polemonium pauciflorum, now in bloom from seeds sown early in the year, is a native of the province of Chihuahua, Mexico, and was first offered this year by Mr. W. Thompson, of Ipswich. It is an interesting variety, because other species of Polemoniums, with the exception of *P. flavum*, are blue flowered. The flowers of this one are pale yellow in the interior of the corolla and yellowish tinged slightly with red on the exterior. The flowers are funnel-shaped, some two inches long, with a spreading five-lobed mouth, and are produced from the tips of the stems and branches in clusters of from two to eight. The plant forms a bushy tuft twelve to eighteen inches high, with the neat foliage characteristic of the family, and as the flowers are pendent or drooping it is very graceful and attractive, though by no means showy. It is said that it blooms in succession from July to October, and is classed as a hardy perennial, which points remain to be tested. There seems to be no variation among my score or so of plants either in growth or bloom.

Elizabeth, N J. *G.*

Correspondence.

Communal Forests.

To the Editor of GARDEN AND FOREST:

Sir.—The *Rural New Yorker* of July 5th contains a contribution by Mr. Charles Barnard on Communal Forests, a subject which deserves the attention of all persons interested in forestry. Referring to the increasing number of abandoned farms and uncultivated, apparently valueless lands, which in the older eastern states reduce the tax-paying capacity of the township, he suggests that by planting these waste, non-producing lands to forest a revenue might be derived from them. "A man," the writer says, "may not live to grow trees for a crop—a town can, because it is itself immortal. Why, then, should not a township grow timber?"

The suggestion, not novel in itself, is a good one, and should command careful consideration, not only by the friends of a rational forest-policy, but by every citizen who is interested in the prosperous condition of the town in which he lives. If every community will concern itself in the rational use of the land within its borders, if every town and every county will give profitable occupation to its waste lands by utilizing them for forest-growth, the movement would not only increase the financial prosperity of each community, but the efforts of those who work for a rational forest-policy in the country at large would be subserved by every communal forest established. In fact, no better method of forest-reform could be suggested than by beginning forestry in each town, which as a part of the country at large, will influence the movement of the whole. As to the desirability of communal forests—of which we have an example in the first town forest in the United States, at Lynn, Massachusetts—there can be no question.

Whether the method of inaugurating such action on the part of the communities as Mr. Barnard proposes is the proper one need not be discussed here, and whether his plantations would prove profitable as readily as he anticipates is open to serious question. Upon this last point Mr. Barnard himself contradicts his anticipations, for while he figures early returns from his plantings, he admits at the same time that forestry may not be a business for private enterprise, because of the long time before the investment pays. This is the very bane of forestry reform. If it could be shown as a general proposition that forestry was a paying enterprise from the start or after three to four years' waiting, it would not be difficult at once to interest capital in forest-planting. There may be returns from thinnings, and the farmer who does not calculate his time while cutting and preparing the material which comes from the thinnings, may find a profit thereby; but even in Germany, where labor is cheap and every kind of wood material is used, necessary thinnings are omitted from calculation because "they do not pay for the work." It would be folly for the townships or counties to engage in forest-planting, except with a full realization that they build for the future, and that no returns can be expected within a decade or more.

The case stands differently in communities where the waste and brush lands can be aggregated with some already productive timber-lands into the communal forest, for the returns from the latter part of the property may, under rational management, be made to pay in part for the improvements and superintendence of the remainder. The profitableness of forests begins to assert itself only after a considerable period of time and after a large enough area has been brought under systematic management.

It takes, then, years and patient waiting, expenditure at first and rational management, to establish a profitable forest.

That such properties can ultimately be made profitable, even under our present conditions, which differ from those of France and Germany considerably, I have no doubt.

In Germany I know of communities where not only all taxes are paid by the revenue from the communal forests, but every citizen receives a dividend in addition. The town of Görlitz, in Silesia, is an example; also the town of Münden, where one of the Prussian forest-academies is situated. The town of Goslar, in the Harz Mountains, derives from 7,500 acres of forest an annual revenue of $25,000 to $30,000, and it may be of interest to American farmers to note that it receives the highest prices for its wood products on account of the excellent roads, which facilitate transportation. The capital invested in making and keeping in order these roads is calculated to yield twenty per cent. yearly on the investment.

From the excellent report of the Forest-master of the City of Zurich (Switzerland), which gives the history of the city forest, going back to the fourteenth century, it appears that the revenue derived from its less than 3,000 acres averaged $15,000 annually during the decade from 1860 to 1870, and $18,600 during the next decade. How forest-property under management appreciates in value appears from the following table, which shows in the forests belonging to the canton of Zurich, and comprising about 82,000 acres, during a period of fifty years, almost a threefold increase both of yield and value. The figures as to yield, expenses and valuation are for a single acre.

Decade.	Gross yield.	Outlay.	Net yield.	Capital value.
1830 to 1840, . . .	$3.25	$0.85	$2.40	$60.20
1840 to 1850, . . .	3.50	1.01	2.49	61.90
1850 to 1860, . . .	4.59	1.02	3.57	89.24
1860 to 1870, . . .	7.06	1.29	5.77	144.43
1870 to 1880, . . .	8.84	1.87	6.97	174.33

The price now is nine to twelve cents per cubic foot, and sixty to seventy cents per day for wages.

While, then, no move in forestry reform could be more promising than the establishment of communal forests; while eventually these forests will be profitable and sources of handsome revenues, we should not expect the impossible from the forest-commissioners and foresters who shall be called to inaugurate the movement.

Washington, D. C. *B. E. Fernow.*

[A full description of the public forest of the City of Lynn or the "Lynn Commonwood," alluded to by Mr. Fernow, has already been given in GARDEN AND FOREST (ii., 526). The early towns of New England held their woodlands and pasture-lands in common, and some 1,400 acres of this land belonging to the City of Lynn now returns to its original character as woodland held in common; but from its position its highest use will be that of a free public pleasure ground.

In an early number we shall publish the first of a series of letters describing the most interesting features of the forest of the City of Zurich, to which Mr. Fernow refers. The letters have been prepared by a young American who is studying forestry in Europe.—ED.]

The Evils of Grafting.

To the Editor of Garden and Forest:

Sir.—As Mr. S. B. Parsons does not approve of Mr. Burbidge's opinions on grafting, may I ask Mr. Parsons, whom I had the pleasure of meeting in America, a few simple questions.

1. I have a number of American Weeping Willows, and in nearly every case the suckers of the common Sallow, on which they are grafted, are springing up and killing them. It is not in the garden proper and I am too busy to keep a man looking out for suckers in out-of-the-way places. Let me ask him if grafting in this and like cases is right. I buy a delicate and graceful tree worked on a vigorous one, which must in time kill it if not carefully watched.

2. I bought one hundred plants of the common Pyracantha to form a low fringe above a sunk fence where I wanted the view clear. In every case suckers of the common Quince came up, notwithstanding some care. Does Mr. Parsons think this is right? In our country the Quince grows to twenty feet high. I wanted my Pyracantha to spread about as a low Evergreen on the ground and now I must have an eternal fight with suckers or remove the trees.

3. The Ribston Pippin Apple is of so fine a quality that it may be called the most famed of English Apples, but in England the tree is generally cankered and decayed. For a trial I planted it on every stock I could obtain, but I could not in Britain nor in Europe get the plant on its own roots. To get this apple into a vigorous state and free from the canker and decay which affect it would be worth a million guineas to England! Is it reasonable to suppose that every Apple does equally well on the Crab (or what we call the Crab), on which we generally graft? I have seen much to make me doubt it, but I am doing what I can to test the matter fully. I think from Mr. Parsons' long and wide experience and clear observation he will be able to throw some light on these questions.

I could ask other questions of the same kind and I believe his experience of the above mentioned sorts of disaster must be considerable. I am sure he is too reasonable to forget that the question is how the tree behaves in the plantation or garden after it leaves the nursery, and not the convenience of the nurseryman, who puts almost everything on a few easily raised stocks in preference to more natural ways of increasing trees by seeds, cuttings or layers.

Office of *The Garden*, London. *H. Robinson.*

I will gladly answer Mr. Robinson's questions, although I see no connection between them and my reply to the strictures of Mr. Burbidge upon a previous article of mine in Garden and Forest. No intelligent or conscientious nurseryman will think, under ordinary conditions, of grafting a cion upon stock which suckers, or upon stock which is not closely related to it; but many nurserymen dissent from Mr. Burbidge's sweeping assertion that "any fruit-bearing or ornamental tree which will not succeed on its own roots had better go to the rubbish pile at once." They will also object to his assertion that "grafting is always a makeshift, and very often a fraud," as a reflection upon a large body of respectable men. And now for the questions.

1. The American Weeping Willow grows readily from cuttings and can be trained to any required height. I can see no advantage in grafting it.

2. We grow the Pyracantha by the thousand for hedges, and grow it by cuttings only. Seedlings will not answer here, for one variety only is hardy, and this will not come true from seed. I cannot conceive why any one should go to the expense of grafting on an unrelated stock like the Quince, or why any one should graft an evergreen tree on the root of a deciduous tree.

3. I do not know the cause of the failure of the Ribston Pippin. It may be an inherent weakness of constitution, and in that case a plant grown from layers would be equally weak. We have similar trouble in this country with the Newtown Pippin, and we overcome it by grafting twice, just as the French do to the Pomme Chataign, a variety which also has inherent weakness. In this double working we have a remedy which it would be unwise to neglect, although it is still more "unnatural" than grafting once. Transfusion of blood may be unnatural, but it has saved human life. If the Ribston Pippin cannot be grown by double grafting, I would try layering; but the American market could never be supplied in this slow and expensive way.

Of course I can see no reason why plants which take root readily from cuttings should be increased by grafting, and I yesterday found myself very impatiently rooting out some Tea Roses which I had imported from England, and which were budded and overgrown by the stock. Our largest Rose-growers here, who produce 800,000 plants a year of Teas and Hybrid Perpetuals, grow them from cuttings only, and we cannot understand why English nurserymen bud Roses at all, unless it is some sort like the Persian Yellow, which does not strike readily from cuttings.

There is little need of adding anything on the general subject of grafting to what I have already said. Nearly all horticultural operations, even to the transplanting of seedlings, are "unnatural" in one sense. That is, they differ from Nature's ways, although they may not be opposed to Nature's laws. But why should it be called "more natural" to force a cutting to throw out roots than to place it on a stock and allow it to make use of roots already formed? I should use cuttings where they will root readily, because it is easier and cheaper than grafting. I have never observed that a tree from a cutting was more vigorous or long-lived than one from a graft when properly set. Near the spot where I am writing is an Oriental Spruce, which is one of the most beautiful and completely furnished specimens I have ever seen of any conifer. It was grafted forty years ago on a stock of Norway Spruce. Propagation by seed is probably the most "natural," but this is impossible when varieties are to be preserved. I know grafted Apple-trees a century old that are as healthy as any seedling tree. Seedling Apple-trees have sprung up all over the older settled parts of this country, and there are no statistics to show that as a class they are longer-lived than grafted trees. Some die young, some live to an old age, according to their vigor of constitution and the congeniality of their surroundings, and it is the same with grafted trees. I can show Mr. Robinson grafted Apple-trees still in healthy bearing condition which my father planted seventy-five years ago.

Flushing, L. I. *S. B. Parsons.*

Low Spear Grass.

To the Editor of Garden and Forest:

Sir.—I enclose a sample of short grass which almost covers my lawn. It comes into flower and seed when not more than an inch or two high, so that the lawn looks gray and bad for patches of several rods square sometimes. It seems to be a good fighter and able to clean out other varieties and take possession entirely. Please tell me what species this is and what is to be done to exterminate it. It seems to get the best of Blue Grass even. It is certainly much worse here this year than it has ever been before.

Madison, N. J. *R. J.*

[The enclosed was a specimen of *Poa annua*, Low Spear Grass, a near relative of June Grass and Fowl Meadow Grass, though differing much from these in habit. It is not a native of America, but comes from Europe. It may grow an inch high, or in new, rich soil a foot high. It loves cool, moist weather, and in damp soil and a cool climate it thrives well in the shade. A little scorching sunlight checks the plants on a dry soil at once and they soon die. Only very small, young plants, if any, live over winter. The blossoms appear very early in spring, probably before those of any other grass. Three or four distinct crops, possibly more, may pass in a single year from the seedling to the seeding plant; but we never heard before that it would crowd out Blue Grass. Professor Beal writes of this grass:

"I had for a long time considered it solely a nuisance on the farm, in the garden or lawn, as it is small and short-lived, but two years ago in August next I saw several lawns under the shade of trees, especially on the south side of Euclid Avenue, in Cleveland, Ohio, largely consisting of this grass. It was not allowed to lack moisture, and

was kept well mown; the light, bright-green color was most charming. There were whole rods of this lawn sometimes in irregular shapes unequaled by anything I ever saw before. There was some June Grass in places and some thin spots where the shade was dense. I did not learn whether this Spear Grass was purposely sown, or whether it had by degrees crowded out other grasses and clovers."

Perhaps the best way to exterminate this Spear Grass is to put the land in fine condition, when with sufficient fertilizer, moisture and light, the small Red Top or June Grass will be able to maintain a good footing against it.—ED.]

Recent Publications.

Elements of Structural and Systematic Botany, for High Schools and Elementary College Courses. By Douglas Houghton Campbell, Ph.D., Professor of Botany in the Indiana University. Boston: Ginn & Co., 1890; pp. 9—253.

It is frequently said, and with some reason, that science is easily learned in these days of abundant and good text-books. No doubt this is as true of botany as of the other sciences, and each new text-book should make the path easier and surer. Unfortunately, there is no royal road to learning, and one result of the great activity of to-day in scientific work, and the resultant specialization of its several departments, is that anything more than an *ipse dixit* knowledge of its general laws is becoming impossible for elementary classes that attempt everything. To lay as good a foundation as is possible for an understanding of such generalizations, most teachers attempt a little laboratory work in one or more directions, in addition to the customary lecture or recitation course. Professor Campbell's book appears to have been written for such teachers.

Inability to cover everything in any such course has given rise to a demand for elementary text-books treating in the simplest manner the practical study of certain parts of botany. Such books cannot, of necessity, be more than introductions to the study, and the courses based on them can be only preparatory to possible future special work in the branch covered. Their use should be possible under the guidance of a teacher of only average ability, or even without a teacher.

Excellent books of this character are both editions of Strasburger's "Botanisches Practicum" and their translations, the botanical part of Huxley and Martin's "Biology," the "Practical Botany" of Bower and Vines, which is an outgrowth of the latter, and the "Handbook of Plant Dissection" of Arthur, Barnes and Coulter. All of these attempt, in a somewhat similar manner, to give a more or less comprehensive knowledge of the structure of selected representatives of the principal groups of plants. The principles of classification of these groups are brought out incidentally in nearly all such books. Physiology is also fairly presented in books of a similar character.

A great stimulus was given to the study of structural botany and the German methods of classification by the publication and translation of the Text-Book of Sachs, nearly twenty years ago, a book which, in its more recent edition, has been divided into several. Some ten years ago Professor Bessey did a good piece of work for teachers by writing his "Botany," largely based on Sachs, and embodying most of its essentials for elementary work, and the needs of still more elementary classes are fairly met by the "Essentials of Botany," subsequently published by the same author.

Each of these books has its uses. None is perfect; but the teacher selects one or the other according to the requirements of the class to be taught. Those of the first group are best adapted to use for teaching methods in connection with a course of good lectures and demonstrations; the others are better adapted to the needs of the student who is to become familiar with representatives of the principal groups of plants and the prevalent basis of classification, when there are few accompanying lectures. Professor Campbell's book belongs to the latter class, rather than the former. It embodies the results of a considerable amount of original work, and contains many original illustrations. That the former adds nothing to the knowledge of the specialist, is no detraction from its merit in this place. The latter are fairly done. In the right hands, the book is likely to prove an acceptable and useful aid in teaching, though it must be admitted that most instructors would have been able to do their work had they been obliged to depend, as in the past, on the older books. It is to be hoped that if it comes to a second edition, the author will specifically name the plants chosen for illustration, which will involve little additional work, and will remove a cause for just criticism of the present edition.

Shaw School of Botany, St. Louis. *William Trelease.*

A *Catalogue of the Plants Found in New Jersey*, being volume two of the Final Reports of the State Geologist of that state, has appeared. It is from the pen of Dr. N. L. Britton, of Columbia College, aided by various specialists, and occupies nearly six hundred and fifty pages, with a full index, which adds to the value of the work. Dr. Britton, as is well known, takes an advanced position on the question of nomenclature, and it is well therefore, perhaps, to reproduce what he says in his introduction on the subject: "The names adopted are based strictly on the principle of priority of publication, the oldest specific or varietal name available being retained in whatever genus the plant is located, or whatever its rank as species or variety. Many of our plants have originally been described in genera other than those now accepted, and many were at first supposed to be species which are now regarded as varieties, or the reverse of this. The method adopted of citing the original author of the specific or varietal name—the only permanent portion of the binomial—in a parenthesis, tells us who first named the plant, while the added name behind the parenthesis shows who first brought the names together in their present combination. This method has, with slight modifications, been generally adopted by zoologists, and by students of fungi, algæ, lichens and mosses, and its general use in botany tends to bring all biological nomenclature into harmony."

Whenever the adopted names differ from those in general use in manuals or class-books of botany, these last are given as synonyms in italics. As a work of reference this catalogue, which is remarkably full in the geographical information it contains, might have been made, perhaps, more useful by the addition of a few references to easily accessible plant-portraits.

The list enumerates: Of flowering plants, 1,919; Ferns and their allies, 76; Mosses, Hepaticæ and allies, 461; Lichens, 329; Algæ, 987; Fungi, 1,705; Protophyla, 164. Total, 5,641.

Similar lists cannot be made too soon for every state, county and neighborhood throughout the nation. We read with regret of the rapid disappearance of many of our wild animals, such as buffalo, elk, deer and Rocky Mountain sheep. In like manner there are many agents at work which have already exterminated a large number of species of plants from entire counties.

Among these destroying agents are the clearing and cultivation of the land and the draining and burning over of swamps and marshes. In many regions fences along the highway have been abandoned, and often the land is cultivated for crops close up to the track of the wheels. The wood-lot is often used as a pasture. In this case the young growth of timber is nearly stripped clean; light enters; grass is encouraged and creeps in. The days of such wood-lots as supplies of timber are numbered; soon the old trees begin to die at the top, make a feeble growth, and the remains are removed for the plow and the meadow. Even along the railways, it is becoming customary to mow or burn the surplus land closely or to cultivate for crops.

In not a few instances the students of neighboring colleges and schools, and members of societies interested in collecting for the herbarium or for their gardens, besides collectors who sell plants to distant nurserymen, all help on the speedy extermination of many interesting plants.

Notes.

By the vote of the school children of New York the Golden Rod has been chosen as the "State Flower." Out of a total of 318,079 votes it received 81,308, while the Rose stood second with 79,666.

The Messrs. Putnam are about to publish a book called "The Trees of North-eastern America," by Mr. C. S. Newhall, with a brief introduction by Professor N. L. Britton, of Columbia College.

Few plants are more useful for the summer decoration of greenhouses than the Tuberous Begonias. Not long ago we saw a house full of these plants from which all the double ones had been rejected, and the effect was wonderfully rich.

The Rose-chafer, whose depredations are described in another column by Professor Smith, has not been long in learning that the flowers of the great Japanese Lilac are suited to its taste. Wherever we have seen these flowers this season they have been preyed upon by Rose-chafers.

Edward Wakefield, in his *History of New Zealand*, estimates that the introduction of bumble-bees into that country has already profited the farmers to the extent of $5,000,000. Before their introduction it was impossible to grow Red Clover seed for lack of fertilizing agents.

In the Boston Public Garden there was lately in bloom a mass of white Ascension Lilies and azure-blue Delphiniums, which presented a most effective combination. The plants seemed informally mingled and they were much more effective from this irregularity.

The new Japanese Poppy Mikado is a really distinct and beautiful flower, the fringe of bright scarlet on the border of the white petals being very effective. It ought to be the parent of a new race of Poppies in which a wider range of colors will be united with the peculiar form of this variety.

In a paper read not long ago before the Rhode Island Horticultural Society, Professor Cushman, apiarist at the State Agricultural Experiment Station, declared that bees never attack sound fruit, but only such as is decayed or has been already injured by other insects; and his words were endorsed by all his auditors.

On one farm of 3,000 acres, entirely devoted to fruit, in Alameda County, California, from $30,000 to $50,000 are annually expended in wages. The laborers are in part Chinese and in part Portuguese. The latter are considered much the better workmen, and many of them have already established themselves on small fruit-farms of their own.

Our valued correspondent, Herr Carl Bolle, of Berlin, has long held the position of Chairman of the Division on Trees in the Society for the Promotion of Horticulture. The knowledge and experience thereby implied should render him especially useful in the position recently given him as a member of the Park Commission of the City of Berlin.

The famous old Elm on Boston Common, which fell in 1876, was especially beloved by Methodists, as under its boughs, in the year 1790, the first Methodist sermon ever heard in Boston was preached by Jesse Lee. A centennial celebration of this event was held on July 11th on the spot where the ancient tree used to stand.

Large quantities of compressed vegetables are annually prepared for use in the British army and navy. In addition to separate sorts, a mixed preparation is much esteemed which consists of forty per cent. of potato, thirty of carrot, ten of cabbage, ten of turnip, and ten of seasoning vegetables, such as onion and parsley. The method employed is to dry the vegetables and compress them into small slabs, which are packed in sealed tins.

The season so far seems to have been favorable for the development of forest fungi. The Ash anthracnose (*Gliosporium aridum*), a fungus closely related to the blight of the Sycamore, Oak and Maple, recently noticed in this journal, and the showy white mildew (*Microstoma Juglandis*), which covers the leaves of the Hickory, are both uncommonly frequent. No remedy has yet been discovered which is not too expensive for ordinary application.

In Germany, at least, landscape-gardeners are thought as worthy of honor as artists of other sorts. Not long ago we recorded the various ways in which Lenné's memory has been honored—by the placing of statues and painted portraits in public places and the naming of streets in more than one town. Lenné's most distinguished pupil and successor was Gustav Meyer, who died in 1877, and to him also a life-size statue has now been erected on the terrace of the Treptower Park in Berlin, which was his last work, and is usually thought his greatest.

An esteemed cotemporary kindly attempts to answer our request for information about the Crandall Currant by saying that it is identical with the Missouri Currant, *Ribes aureum*. This fact, however, is one which seems to be universally admitted. The question, originally asked by Mr. Thomas Meehan, is this: How does the Crandall Currant differ from varieties of the same species introduced twenty-five years ago under the names of the Utah Black and Utah Yellow Currants? We should like to know whether these earlier introductions have been kept distinct in cultivation.

The *American Garden* quotes from a western paper the measurements of three Apple-trees. One, which stands in Fairfield County, Ohio, and bears a fruit closely resembling Maiden's Blush, is nine feet five inches in circumference at three feet above the ground, with a spread of seventy feet in diameter. Another, in Wayne County, Ohio, is ten feet four inches in circumference at one foot above the ground, and is known to be seventy-six years old. The third and largest is in the same state, in Washington County, and was planted in 1791 or 1792. The trunk, where it is smallest, girths twelve feet two inches, and the largest branch girths seven feet. It is a seedling, which bears a large yellow apple of excellent quality for cooking.

A German journal reports that about fifty novelties of American introduction were included in the last Chrysanthemum exhibition in London. The writer praises Mrs. Alpheus Hardy very warmly, and says the anticipatory reports were not overcharged except as regards the size of the blossoms, and their smallness he attributes to weakness in the plants caused by excessive multiplication. Among the finest of the other American novelties he notes Medusa, Shasta, Monadnoc (which is especially commended), John Thorpe, Mrs. Andrew Carnegie, George McClure, Mrs. A. J. Drexel, G. F. Moseman, J. C. Price, Beauty of Castlewood and Superbe Flore, which has been introduced in several German cities by an English firm and excited general admiration.

Referring to the note on wire-worms quoted in our last number from *The Garden*, Professor Smith writes that these worms have been for years among those pests for which we had no satisfactory remedies. Salt in corn hills has been used with more or less success, but has killed as many corn plants as wire worms. Experiments made during the present season indicate that in the potash salts, muriate and kainit, we have the long looked for remedy. Laboratory experiments prove positively that both of these substances are fatal to wire-worms, both the myriapods (Iulus sp.) and the spring beetle (Elaterid) larvæ, while the universal testimony of farmers who have been in the habit of using these substances as fertilizers is to the effect that they have not been bothered since they used them. It will not do to plant in a bed of either muriate or kainit, since the latter especially is dangerous to plant life; but a heavy top dressing some days before planting so that a rain will dissolve and carry the salts into the ground will prove fatal to most of the insects in the soil. Experiments indicate that the muriate is the more effective on insects and the least injurious to plant life.

In a recent number of the *Sanitarian* Dr. W. T. Parker protests against the thick planting of trees very near the house. Not only do they prevent the free access of air and of sunshine or even light, but they also injure the character of the soil as suited for permanent occupation. "A soil," says the writer, "loaded with roots and densely shaded is unfit for man to live upon constantly. . . . Vegetation produces a great effect upon the movement of the air. Its velocity is checked, and sometimes in thick clusters of trees or underwood the air is almost stagnant. If moist and decaying vegetation be a coincident condition of such stagnation, the most fatal forms of malarious diseases are produced. A moist soil is cold, and is generally believed to predispose to rheumatism, catarrh and neuralgia. It is a matter of general experience that most people feel healthier on a dry soil. In some way, which is not clear, a moist soil produces an unfavorable effect upon the lungs. A moist soil influences greatly the development of the agent, whatever it may be, which causes the paroxysmal fevers." Of course in the desire to avoid possible dangers it is not necessary to place a house on an absolutely bare spot, away from any tree, as is often done by rural builders, even when fine trees are within reach. Enough trees to produce an effect agreeable to the eye and comfortably to shade certain portions of the house and its immediate vicinity in summer, yet not so many as to render the soil damp or prevent the free circulation of air, or wholly shut out the sun. This should be the householder's ideal. Conifers are especially bad if many of them stand close to the house, because they exclude sunshine in winter, when one cannot have too much of it.

Mr. B. S. Williams, widely known as the author of the standard work on Orchid culture, "The Orchid Manual," died recently in his sixty-seventh year. He came of a family of gardeners, having worked as a boy under his father (who is still alive at the age of ninety-four) in the gardens of Mr. John Warner, a famous Orchid-grower of the time. His most noteworthy book was the outcome of a series of letters written to the *Gardeners' Chronicle* under the title "Orchids for the Million." It has gone through six editions, and his "Choice Stove and Greenhouse Plants" and "Select Ferns and Lycopods" are likewise esteemed as excellent manuals in their departments. For nearly half a century he has been a successful exhibitor of various classes of plants.